

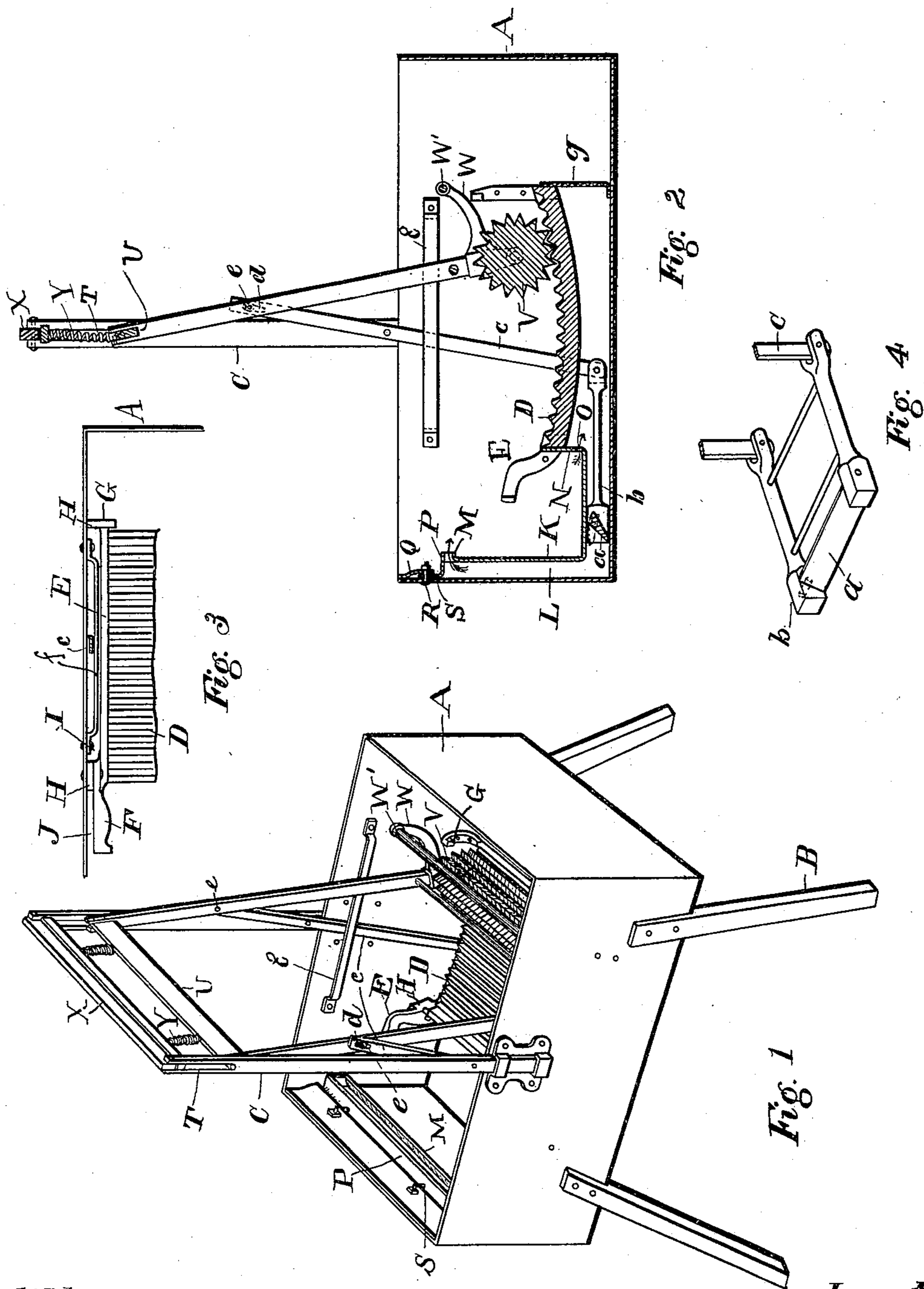
No. 618,570.

Patented Jan. 31, 1899.

F. D. HARDING.  
WASHING MACHINE.

(Application filed July 22, 1897.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

FRED D. HARDING, OF BALDWIN, MAINE.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 618,570, dated January 31, 1899.

Application filed July 22, 1897. Serial No. 645,515. (No model.)

*To all whom it may concern:*

Be it known that I, FRED D. HARDING, a citizen of the United States, residing at Baldwin, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in washing-machines, and more particularly to that class of machines wherein a corrugated roller is caused to travel back and forth over a corrugated board and an intermittent stream of water is caused to be thrown upon the board. It is designed to make a machine simple in construction, convenient in use, and efficient in operation.

In the drawings herewith accompanying and making a part of this application, Figure 1 is a perspective view of my improved machine. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a detail plan view of a portion of the board, the bracket which supports the board, &c. Fig. 4 is a perspective view of the plunger and the frame which carries it.

In said drawings, A is a tank of any suitable size, shape, and material. It is mounted on legs B and has standards C secured to the sides thereof. The scrubbing-board D is supported on brackets E, attached to the sides of the tank, the brackets having curved flanges F on the forward ends to support the roller when not in use and lugs G on the opposite ends, which limit the backward movement of the roller. The brackets have offsets H, which support the brackets away from the sides of the tank and thus form long narrow open spaces I and spaces J beyond the offsets H between the brackets and tank. The flanges being curved and extending beyond the offsets yield slightly to receive and hold the roller when not in use, the flange itself or the side of the tank being somewhat flexible. The board in a longitudinal direction is slightly curved. In the front end of the tank is set an angle-plate K, which forms, with the front end and bottom of the tank, the conduit L,

through which the water from the tank is thrown upon the board. The top of this plate is turned out at right angles to the wall, as seen at M, and the bottom is turned up at right angles, as seen at N. It is provided with a series of holes O, which permit the water to flow back into the bottom of the tank. Secured to the front wall, above the end M of plate K, is a plate P, the lower end being bent forward and forming, with the end M, the orifice of the conduit opening toward and adapted to direct the water passing therethrough upon the board. To make the orifice adjustable, I insert the edge of plate K under a retaining-strip Q, the upper end of which is tightly soldered or otherwise secured to the tank. Bolts R pass through the tank, strip, and plate, and the plate may be adjusted vertically by having the bolts pass through slots S in the plate. Suspended in slots T in the top of standards C is a rectangular frame U, in the bottom of which is journaled a corrugated roller V. Projecting rearwardly therefrom are brackets W, to which is secured a handle W' for operating the roller. A cross-bar X connects the tops of the standards, and between the top of the swinging frame and cross-bar are springs Y, which hold the roller normally down upon the board, but yield sufficiently to allow the roller to pass over any thickness of material that may be on the board. In the horizontal part of the conduit formed by the bottom of the tank and the plate before mentioned is a plunger *a*, pivotally and eccentrically mounted in the end of a rectangular frame *b*. The free edge of the plunger is in advance of the pivot-point, so that the resistance of the water causes it to drop down and fill the conduit when being driven forward and to float up and allow a fresh supply of water to enter the conduit when being drawn back. The first position is shown in Fig. 2 and the second position is shown in dotted lines in the same figure. Pivotally and centrally secured to the inside of each of the standards is a lever *c*, the upper end being pivotally connected with the swinging frame and the lower end with the frame which carries the plunger. The upper end of the lever has a vertical slot

*d* therein, through which the pivot-pin *e* passes and which permits the swinging frame to rise to allow the roller to pass over the material on the board and the lever to swing beyond the pivot-point. To prevent the sides of the swinging frame from coming in contact with the edge of the lever, I attach to the sides of the tank longitudinal strips *f*, which extend over said lever. The space from the rear end of the board to the bottom of the tank is filled with a piece of netting *g*. It will be seen that the space beneath the board, the conduit, and plunger are all separated from the main portion of the tank, thus obviating all danger of the material being drawn under the board or into the conduit. The corrugations in the roller are somewhat deeper than those in the board with which they register, thus forming little reservoirs at the inner portions of the grooves in the roller. The advantages of this arrangement are that the water is forced through the material into the little reservoir formed between the material and the bottom of the flutes on the roller, which forcing of the water entirely through the clothes aids materially in the cleansing process. Likewise the greater depth of the flutes in the roller tends to draw the material out of the flutes in the board immediately in front of the flutes in mesh, so that water gathers in the little reservoirs between the bottom of the flutes and the clothes on the board, and when the flutes in the board and roller mesh the water is forced through the clothes instead of, as is usual when the clothes remain pressed closely into the flutes, forcing the water down upon the top of the clothes. This also increases very much the efficiency of the washing.

The operation of the plunger is apparent. When the swinging frame is drawn back the lever drives the plunger forward in the horizontal part of the conduit, the plunger filling the conduit and forcing water upward and forward upon the board. When the swinging frame is pushed forward, the lever draws the plunger back, the edge of the plunger floating up to permit a fresh supply of water to enter the conduit from the tank.

Having thus described my invention and its use, I claim—

1. In a washing-machine, a suitable tank, a corrugated scrubbing-board, an angle-plate forming, with the bottom and end of the tank, a conduit for discharge of water upon the board, a frame adapted to reciprocate in the horizontal part of said conduit, a plunger pivotally mounted in said frame, a swinging corrugated roller and means for reciprocating said frame and plunger, substantially as and for the purposes set forth.

2. In a washing-machine, a tank, a corrugated scrubbing-board, an angle-plate in one end of said tank forming, with the end and bottom of the tank, a conduit for discharge of water upon the board, the upper end of

said angle-plate being bent forward, and a second plate secured to the end of the tank above said first-named plate and forming therewith a long narrow orifice through which the water is thrown upon said board, a swinging frame carrying a scrubbing-roller, a reciprocating frame carrying a plunger operating in the horizontal part of said conduit, and a lever connecting said frames, whereby the reciprocating frame is operated by the swinging frame, substantially as and for the purposes set forth.

3. In a washing-machine, a tank, a corrugated scrubbing-board, a horizontal and vertical conduit arranged in one end thereof, a frame having a plunger eccentrically and pivotally mounted therein and adapted to reciprocate in the horizontal part of said conduit, a swinging frame carrying a corrugated roller adapted to mesh with said board, standards secured to the sides of the tank and a lever pivotally mounted on said standards, one end secured to the reciprocating frame which carries the plunger and the other secured to the swinging roller-frame by a pivot and sliding connection, substantially as and for the purposes set forth.

4. In a washing-machine, a tank, a scrubbing-board, an angle-plate in one end of said tank forming, with the bottom and end of the tank, a conduit for the discharge of water upon the board, an adjustable plate secured to the tank and forming, with the top of said angle-plate, a long narrow orifice to said conduit, a swinging frame carrying a scrubbing-roller, a reciprocating frame carrying a pivotally-mounted plunger and means connecting said frames whereby the swinging of the roller-frame reciprocates the plunger-frame, substantially as and for the purposes set forth.

5. In a washing-machine, a tank, a scrubbing-board, an angle-plate forming, with the bottom and end of the tank, a conduit for the discharge of water upon the board, the lower end of said angle-plate being turned up to meet the forward edge of said board and provided with perforations, a perforated guard connecting the rear edge of the board with the bottom of the tank, a frame carrying a plunger adapted to reciprocate in the horizontal portion of said conduit and a swinging frame adapted to operate said reciprocating frame and having a scrubbing-roller journaled therein, substantially as and for the purposes set forth.

6. In a washing-machine, a tank, brackets secured to the sides of the tank, open spaces between the brackets and sides, a scrubbing-board supported in said brackets, an angle-plate forming, with the end and bottom of the tank, a conduit for the discharge of water upon the board, a frame carrying a plunger adapted to reciprocate in the horizontal portion of said conduit, a swinging frame having a scrubbing-roller journaled therein, and levers pivotally connected to the tank and

extending downwardly through said open  
spaces between the brackets and sides of the  
tank, one end connected with the swinging  
frame and the other with the reciprocating  
5 frame, substantially as and for the purposes  
set forth.

In testimony whereof I affix my signature,

in presence of two witnesses, this 15th day of  
July, 1897.

FRED D. HARDING.

Witnesses:

NATHAN CLIFFORD,  
ELGIN C. VERRILL.